

**Remarks**

Applicants respectfully request reconsideration of the present application in view of the above amendments and following remarks. Claims 1, 7 and 13 have been amended. No claims have been added or cancelled. Therefore, claims 1-9 and 13 are pending in the present application.

Claims 1 and 13 have been objected to because the phrase in line 10 providing a "keyway bottom and" should instead be a "keyway bottom portion and." Claims 1 and 13 have been amended to correct these informalities and Applicants request that the objection be withdrawn.

Claims 1-9 and 13 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,688,070 to Morelli et al. ("the Morelli reference"). Applicants respectfully traverse this rejection.

Amended claim 1 is directed to an apparatus including a cylindrical shaft, a hub, and at least one tapered locking key. The cylindrical shaft has at least one longitudinal keyway formed in an outer surface thereof. The at least one keyway has a bottom portion and at least two side walls. The hub has a cylindrical axial bore defining a wall in the hub and is disposable on the shaft to define a maximum distance from the keyway bottom portion to the bore wall. The wall is cylindrical about the entire surface of the axial bore. The at least one tapered locking key is adapted for insertion into the at least one keyway between the keyway bottom portion and the bore wall. In addition, the key has a pre-insertion maximum height greater than the maximum distance such that at least one of the key and the hub is

deformed by the insertion whereby the hub is rotationally and axially secured onto the shaft.

By providing the apparatus as provided above, numerous advantages are realized. For instance, the present invention allows for the independent calibration of a throttle shaft and sensor output coupled to the hub prior to fixing the rotary relationship between the shaft and the hub. See *Specification*, pg. 6, lines 16-23; pg. 7, lines 1-4.

Applicants submit the Morelli reference does not teach or suggest an apparatus having a hub with a cylindrical axial bore defining a wall that is cylindrical about the entire surface of the axial bore as recited in amended claim 1. Instead, as best seen in FIG. 4 of the Morelli reference, a keyway is formed in both an inner periphery of bore (46) (Col. 3, line 47) and an outer surface draft shaft (44) (Col. 3, lines 35-36) to receive integral key (52). Alternately, as best shown in FIG. 5 of the Morelli reference, a sleeve (164), adapted to fit between drive shaft (144,145) and bore (146), has a keyway (170) defined in its inner periphery that is adapted to be aligned with a keyway (148,149) formed in drive shaft (144,145) to accommodate key (171), and a key (174) formed in the outer periphery of sleeve (164) adapted to engage a keyway (176) formed in bore (146). See Col. 3, lines 66-67; Col. 4, lines 1, 18-28. Thus, in the FIG. 5 embodiment, both the inner periphery of the bore (146) and the inner periphery of the sleeve (164) have a keyway to receive keys 174, 171, respectively.

The inner peripheries of the sleeve (164), and bores (46, 146) of the Morelli reference are not cylindrical about the entire inside surface as recited in Claim 1.

Thus, the device in the Morelli reference does not allow for the independent rotational indexing of the shaft relative to the sleeve since the keyways (48,148, 170) must always be aligned in order to allow the key (56,171, 174) to fixedly couple the sleeve to the shaft. As a result, the position of the shaft relative to the sleeve may not be varied, which is one of the problems that the present invention intends to solve. See *Specification*, pg. 2, lines 3-7. Since all of the features present in amended claim 1 are not disclosed by the Morelli reference, Applicants respectfully request that the rejection of claim 1 be withdrawn.

As claims 2-6 depend from claim 1, Applicants request that the rejection of these claims also be withdrawn for at least the same reason set forth with respect to claim 1.

Amended claim 7 is directed to a method for securing a hub having a cylindrical axial bore defined by a bore wall onto a cylindrical shaft. The bore wall is cylindrical about the entire surface of the axial bore. The method includes providing at least one longitudinal keyway in the shaft, wherein at least one keyway has a bottom portion and at least two side walls, disposing the entirely cylindrical axial bore of the hub onto the shaft to define a maximum distance between the keyway bottom portion and the bore wall, providing at least one longitudinally tapered wedging means, and inserting the at least one wedging means into the at least one keyway between the keyway bottom portion and the bore wall.

Applicants submit that the Morelli reference does not teach or suggest a method that includes disposing an entirely cylindrical axial bore of a hub onto a shaft as recited in amended claim 7. As stated above, the inner periphery of the sleeve in

the Morelli reference is not entirely cylindrical because it has a keyway defined therein. Thus, Applicants respectfully request that the rejection of claim 7 be withdrawn. As claims 8 and 9 depend from claim 7, Applicants request that the rejection of these claims also be withdrawn for at least the same reason set forth with respect to claim 7.

Amended claim 13 is directed to an apparatus for securing a hub to a shaft including a shaft having an entirely cylindrical outer surface, a hub and at least one tapered locking key. The hub has an axial bore that defines a wall in the hub and has at least one longitudinal keyway formed in an inner surface thereof. The at least one keyway has a bottom portion. The hub is disposable on the shaft to define a maximum distance from the keyway bottom portion to the outer surface. Further, the at least one longitudinally tapered locking key is adapted for insertion into the at least one keyway between the keyway bottom portion and the shaft surface. The at least one key has a pre-insertion maximum height greater than the maximum distance such that at least one of the key and the shaft is deformed by the insertion, whereby the hub is rotationally and axially secured onto the shaft.

Applicants submit that the Morelli reference does not teach or suggest an apparatus for securing a hub to a shaft, wherein the shaft has an entirely cylindrical outer surface as recited in claim 13 of the present invention. Instead, each of the shafts (144, 145) disclosed in the Morelli reference have keyways (148, 149) formed therein. See Col. 3, lines 66-67; Col. 4, line 1. Therefore, the device in the Morelli reference fails to teach every limitation included in claim 13 and Applicants request that the rejection of this claim be withdrawn.

Claim 13 has been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 1,560,399 to Preston, Sr. ("the Preston reference").

The Preston reference does not teach or suggest an apparatus having at least one longitudinally tapered locking key as recited in amended claim 13. In rejecting claim 13, the Examiner stated that the Preston reference includes a key (10) that is "tapered on the lengthwise edge." *Office Action*, pg. 6. When viewing a cross-section of the key (10) shown in FIG. 9 of the Preston reference, the key (10) decreases in thickness when extending laterally from each of the outer edges (15, 16) toward a center portion of the key (10). However, as best seen in FIGS. 4 and 7 of the Preston reference, the key (10) is not tapered along its longitudinal axis, which extends between the left and right ends of the key (10). Since the Preston reference fails to teach or suggest each limitation in claim 13, Applicants respectfully request that the rejection of claim 13 be withdrawn.

### **Conclusion**

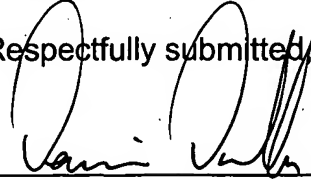
In light of the foregoing, Applicants submit that claims 1-9 and 13 are in condition for allowance and such allowance is respectfully requested. Should the Examiner feel that any unresolved issues remain in this case, the undersigned may be contacted at the telephone number listed below to arrange for an issue resolving conference.

The Commissioner is hereby authorized to charge the \$770.00 fee required under 37 C.F.R. § 1.17(e) for the Request for Continued Examination, the \$110.00 fee required under 37 C.F.R. § 1.17(a)(1) for the one-month extension of time, and

any other fee that may have been overlooked to Deposit Account No. 10-0223.

Respectfully submitted,

Dated: 4/8/04

  
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